



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,117	11/20/2001	Michael Lewis	CISCO-4681	9745
21921	7590	04/27/2005	EXAMINER	
DOV ROSENFELD 5507 COLLEGE AVE SUITE 2 OAKLAND, CA 94618			TRAN, KHANH C	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/039,117	Applicant(s) LEWIS ET AL.	
	Examiner Khanh Tran	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 12-19, 21-26 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 4, 11, 20 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/02/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-3, 5-10, 12-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Norrell et al. U.S. Patent 6,874,096 B1.

Regarding claim 1, in column 8, lines 45-60, Norrell et al. discloses a method for detecting arrival time of a packet including a preamble. By definition, a packet is also known as a frame. The arrival time of a packet inherently defines a beginning of a frame or packet in Norrell et al. invention. The method comprises the steps:

receiving and demodulating a signal; correlating the demodulated received signal with a stored preamble to produce a correlated output. The foregoing steps correspond to the claimed step "processing a received signal with a known preamble ...";

detecting a maximum of the correlated output during a window of period W; and comparing an index of the maximum with the output of a modulo-L counter to produce a packet arrival time at a symbol period boundary of the received signal. The foregoing steps correspond to the claimed step "searching for an indication of strong cross-correlation...".

The method as taught by Norrell et al. further comprises the step of using the packet arrival time to adjust a variable sample delay of the demodulated received signal. The foregoing step addresses the claimed step "registering start of the frame upon detection of the indication".

Regarding claim 2, as recited in claim 1, method as taught by Norrell et al. includes the step of correlating the demodulated received signal with a stored preamble to produce a correlated output.

Regarding claim 3, the method discussed in claim 1 does not include the claimed step of further filtering the cross-correlation signal. However, in column 7, lines 35-67, see also figure 2, the apparatus includes a complex correlator 200, a first low pass filter 202, a second low pass filter 204, a first squaring device 207, a second squaring device 209. In light of the aforementioned disclosure, the method in claim 1 inherently performs filtering step of the correlated output (e.g. in-phase and quadrature samples).

Regarding claim 5, the method discussed in claim 1 does not include the claimed step of non-linearly processing said cross-correlation information prior to the searching. However, as recited in claim 3, the apparatus includes first squaring device 207 and a second squaring device 209. The squaring device is a non-linear device. In light of that, the method in claim 1 inherently performs non-linearly processing the correlated output signal (e.g. in-phase and quadrature samples).

Regarding claim 6, referring to figure 2, using analogous arguments as in claim 5, the apparatus includes first squaring device 207 and a second squaring device 209.5, which perform squaring of in-phase and quadrature components of correlated output signal from complex correlator 200. In light of that, the method in claim 1 inherently performs squaring of in-phase and quadrature components of correlated output signal as claimed in the Patent application.

Regarding claim 7, claim 7 is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 8, in column 7 lines 35-67, see also figure 2, Norrell et al. teaches an apparatus for detecting arrival time for a packet and using the packet arrival time to adjust a variable sample delay of the demodulated received signal. As recited in claim 1, a packet is equivalent to a frame. Detecting packet arrival time and using packet arrival time to adjust a variable sample delay of the demodulated received signal are steps of performing frame synchronization. The apparatus includes:

A complex correlator 200 configured to correlate real and imaginary components of the demodulated received signal with real and imaginary components of the stored preambles to produce a real correlator output and an imaginary correlator output, which are filtered by low pass filters 202 204. Outputs from low pass filters 202 204 are further squared by squaring devices

207 209. Outputs from squaring devices 207 209 are further combined by an adder 208 to produce a correlated output. In light of the foregoing discussion, complex correlator 200, low pass filters 202 204, and squaring devices 207 209 constitute to the claimed cross-correlation system;

A peak detector 206 configured to detect a maximum value of the correlated output during a window of period W and to compare an index of the maximum value of the correlated output with a modulo- L counter value to produce the packet arrival time. In figure 1, Norrell et al. further teaches that the packet arrival time is used to adjust a variable sample delay 146 of the demodulated received signal; see also column 8, lines 55-60. In view of the foregoing discussion, the peak detector corresponds to the claimed synchronization signal generation block.

Regarding claim 9, as recited in claim 8, the complex correlator 200 is configured to correlate real and imaginary components of the demodulated received signal with real and imaginary components of the stored preambles to produce a real correlator output and an imaginary correlator output. The real correlator output component and an imaginary correlator output component are representative of the claimed cross-correlation signal.

Regarding claim 10, as recited in claim 8, a complex correlator 200 configured to correlate real and imaginary components of the demodulated received signal with real

and imaginary components of the stored preambles to produce a real correlator output and an imaginary correlator output, which are filtered by low pass filters 202 204. In view of that, low pass filters 202 204 correspond to the claimed filter.

Regarding claim 12, as recited in claim 8, due to the non-linear characteristic of squaring device, squaring devices 207 209 performs non-linearly processing on real correlator output and imaginary correlator output components of the cross-correlation information. The squaring devices 207 209 correspond to the claimed non-linear processing element.

Regarding claim 13, as recited in claim 8, squaring devices 207 209 square real correlator output and imaginary correlator output components.

Regarding claim 14, as recited in claim 8, low pass filters 202 and 204 filter real correlator output and imaginary correlator output components.

Regarding claim 15, claim 15 is rejected on the same ground as for claim 1 because of similar scope. Furthermore, referring to figure 2, complex correlator 200 corresponds to the claimed means for processing a received signal with a known preamble to obtain cross-correlation information. Peak detector 206 corresponds to the claimed means for searching for an indication of strong cross-correlation. Output from

peak detector 206, packet arrival time, corresponds to the claimed means for registering start of a frame.

Regarding claim 16, claim 16 is rejected on the same ground as for claim 8 because of similar scope. Furthermore, complex correlator 200, low pass filters 202 204, and squaring devices 207 209 constitute to the cross-correlation system, which corresponds to the claimed means for cross-correlating a received signal. The peak detector 206 corresponds to the claimed means for searching.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17-19, 21-26 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norrell et al. U.S. Patent 6,874,096 B1.

Regarding claim 17, claim 17 is rejected on the same ground as for claim 1 because of similar scope. However, Norell et al. does not teach a computer program product for detecting start of a frame the product as set forth in the application claim. Nevertheless, because of the advancement of computer technology and computer programming, one of ordinary skill in the art would have been motivated to implement a computer program product comprising codes performing steps of the method in claim 1.

Art Unit: 2631

As also known in the art of computer technology, a computer hard drive can be used to store the codes.

Regarding claim 18, using similar rejection argument of claim 17, claim 18 is rejected on the same ground as for claim 2 because of similar scope.

Regarding claim 19, using similar rejection argument of claim 17, claim 19 is rejected on the same ground as for claim 3 because of similar scope.

Regarding claim 21, using similar rejection argument of claim 17, claim 21 is rejected on the same ground as for claim 5 because of similar scope.

Regarding claim 22, using similar rejection argument of claim 17, claim 22 is rejected on the same ground as for claim 6 because of similar scope.

Regarding claim 23, using similar rejection argument of claim 17, claim 23 is rejected on the same ground as for claim 7 because of similar scope.

Regarding claim 24, using similar rejection argument of claim 17, claim 24 is rejected on the same ground as for claim 8 because of similar scope. Furthermore, as recited in claim 17, a computer hard drive can be used to store the codes as appreciated by one of ordinary skill in the art.

Regarding claim 25, using similar rejection argument of claim 17, claim 25 is rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 26, using similar rejection argument of claim 17, claim 26 is rejected on the same ground as for claim 10 because of similar scope.

Regarding claim 28, using similar rejection argument of claim 17, claim 28 is rejected on the same ground as for claim 12 because of similar scope.

Regarding claim 29, using similar rejection argument of claim 17, claim 29 is rejected on the same ground as for claim 13 because of similar scope.

Regarding claim 30, using similar rejection argument of claim 17, claim 30 is rejected on the same ground as for claim 14 because of similar scope.

Allowable Subject Matter

3. Claims 4, 11, 20 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hsieh et al. U.S. Patent 6,643,336 B1 discloses "DC Offset And Bit Timing System And Method For Use With A Wireless Transceiver".

Popovic U.S. Patent 6,549,564 B1 discloses "Random Access In A Mobile Telecommunications System".

Yun U.S. Patent 5,909,471 discloses "Method And System For Rapid Initial Control Signal Detection In A Wireless Communications System".

Popovic U.S. Patent 6,567,482 B1 discloses "Method And Apparatus For Efficient Synchronization In Spread Spectrum Communications".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2631

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanh con g Trau

04/26/2005

Examiner KHANH TRAN